Definition of value creation ratios

ATP's three ratios:

1. Value creation from pensions
2. Value creation from bonus potential
3. Total value creation

Re 1. Value creation from pensions describes the average annual return from the pensions. This ratio illustrates the connection between the contributions paid and the guaran-teed benefits (cash flows). Value creation from pensions in an individual year is calculated as the return on a 'pension account', PK, corresponding to the value of all interest-bearing contributions to a pension.

It has not been possible to recreate the guaranteed cash flows from ATP's start in 1964. The value of the pension account when this calculation started in the beginning of 2008 has therefore been determined at DKK 281bn, corresponding to the value of the guaranteed benefits at the end of 2007. The amount of DKK 281bn is considered an individual contribution to the pension account.

Based on the guaranteed cash flow at the end of 2007, the return on this contribution can be determined as the interest, r, which satisfies the following equation:

$$\text{Contribution}_{\text{year-end 2007}} = \sum CF(t)\,(1+r)^{-(t-2008)}$$

where CF(t) is the payout from the guaranteed cash flow un-til the time, t.

Looking forward, contributions will be made to the pension account in the form of, for example, ordinary contributions from members, update of life expectancy, addition of bonus etc. At the end of a quarter, the payments, B(t), added to the pensions benefits over the quarter can be calculated. At the same time, the acquired guaranteed cash flow can be calculated by deducting the cash flow at the beginning of the period from the cash flow at the end of the period:

ΔCF = guaranteed cash flow, end of the period – guaranteed cash flow, beginning of the period

The interest on year i's contributions is the interest, r, that satisfies the equation:

$$\sum B(t)(1+r)(i+1-t) = \sum \Delta CF(t)(1+r)-(t-(i+1))$$

For each year, the interest payable on contributions in future will be calculated to ensure that contributions made in the year correspond to the future guaranteed payouts re-lating to these contributions. Accordingly, the pension ac-count can be seen as a number of subaccounts that each bears the interest that was determined in the year in which the relevant subaccount was set up. The total value of the pension account at the beginning and end of the year can be determined by adding up all subaccounts at the beginning and end of the year.

The pension accounts at the start and end of the period are added together with the provisions for life annuity with market exposure at the start and end of the period. Then the period's returns in life annuity with market exposure are included in the calculation of the period's value creation from pensions.

When adjusting for the total payments, P(t), and total contributions ,C(t), during the year, the interest rate on the whole pension account can be measured as the interest, r, that satisfies the equation:

$$PK_{\text{end of period}} = \sum B(t)(1+r)^{(i+1-t)} - \sum U(t)(1+r)^{(i+1-t)} + (1+r)PK_{\text{beginning of the period}}$$

Re 2. The value creation from the bonus potential, BP, is calculated on the basis of the bonus potential at the beginning and end of the year, adjusted for the contributions, B(t) (bonus contributions), and payouts, U(t) (updating of life expectancy, bonus etc.), made over the year. The interest on the bonus potential is the interest, r, that satisfies the equation:

$$BP_{\text{end of period}} = \sum B(t)(1+r)^{(i+1-t)} - \sum U(t)(1+r)^{(i+1-t)} + (1+r)BP_{\text{beginning of the period}}$$

Re 3. The total value creation is calculated on the basis of the sum of the pension account and the bonus potential, PK + BP, at the beginning and end of the year, adjusted for pay-outs and contributions to the pension account and the bonus potential.

$$(PK+BP)_{\text{end of period}} = \sum B(t)(1+r)^{(i+1-t)} - \sum U(t)(1+r)^{(i+1-t)} + (1+r)(PK+BP)_{\text{beginning of the period}}$$

As the addition of bonus constitutes a payout from the bonus potential and a contribution to the pension account, the bonus addition nets out and does not affect the total interest. Updating life expectancy will have the same effect. Consequently, the only contributions and payouts added to the sum of the pension account and the bonus potential are the actual contributions from and payouts to the members.